

Claims 40-42 stand rejected under 35 U.S.C. 103(a) for obviousness over Strandberg (6,054,999). Applicants respond as follows.

Claims 40-42 have been amended to clarify that the recited viewing angles are determined with respect to a selected user viewpoint. Amended claims 40-42 indicate that the viewing angles relate to the viewing position of a user who is outside of and observing a display screen. In contrast, Fig. 2 of Strandberg shows an animation character rendered with different character orientations. Applicants submit that Strandberg provides no teaching or suggestion of the claimed subject with viewing angles that are determined with respect to a selected user viewpoint. The Examiner concurred with this position, subject to a supplemental search. Applicants request that this rejection be withdrawn and that claims 40-42 be allowed.

Applicants believe the application is in condition for allowance and respectfully request the same.

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Respectfully Submitted,

  
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Attachment  
Claims 1-42  
Application Number: 09/195,728

1. A computer-readable medium having stored thereon a tile data structure for a tile representing an image texture for tiled texture mapping, comprising:

plural tile data structures representing plural respective views of the image texture rendered simultaneously on a display screen immediately adjacent each other.

2. The medium of claim 1 in which the plural respective views of the image texture are based upon oblique-parallel projections of the image texture.

3. The medium of claim 1 in which the plural respective views correspond to a range of user viewing angles that are rendered simultaneously on the display screen, each tile data structure corresponding to a segment in the range of user viewing angles.

4. The medium of claim 3 in which the segments in the range of user viewing angles are not equal.

5. The medium of claim 4 in which viewing angles are with respect to a predetermined reference and the segments closest to the predetermined reference are smaller than the segments farthest from the predetermined reference orientation.

6. The medium of claim 3 in which the segments in the range of user viewing angles are equal.

7. The medium of claim 3 in which the range of viewing angles extends over viewing angles of positive and negative magnitudes relative to a viewpoint position.

8. The medium of claim 7 in which the segments of viewing angles of positive magnitudes to which tile data structures correspond are matched one-to-

one with the segments of viewing angles of negative magnitudes to which tile data structures correspond.

9. The medium of claim 1 in which the plural respective views are within only one angular dimension.

10. The medium of claim 9 in which the one angular dimension is a horizontal angular dimension corresponding to angles within a horizontal imaging plane.

11. The medium of claim 1 in which the plural respective views are within only two angular dimensions.

12. The medium of claim 11 in which the two angular dimensions are a horizontal angular dimension corresponding to angles within a horizontal imaging plane and a vertical angular dimension corresponding to angles within a vertical imaging plane.

13. (Amended) The medium of claim 1 in which the image texture includes an outer surface and the outer surface is of the same dimensions in each of the plural respective views of the image texture.

14. The medium of claim 1 in which the plural respective views of the image texture are based upon morphings of the image texture.

15. The medium of claim 1 in which the plural respective views of the image texture are based upon manually formed renderings of the image texture.

16. A computer method of applying a texture map to an image surface in a graphics image rendered on a computer display screen, comprising:

identifying plural adjacent regions of the image surface to which regions the texture map is to be applied;

determining a user viewing angle for each of the plural regions;

correlating each viewing angle with a texture map tile corresponding to the viewing angle; and

rendering the texture map tiles simultaneously at the adjacent regions on the computer display screen to form the texture map on the image surface.

17. The computer method of claim 16 in which the texture map tile corresponding to the viewing angle for each region is one of plural predetermined texture map tiles stored in a computer memory.

18. The computer method of claim 16 in which the texture map tile corresponding to the viewing angle for each region is calculated based upon the determining of the viewing angle.

19. The computer method of claim 16 in which determining a viewing angle for each region includes determining only one viewing angle for the region corresponding to angles within only one imaging plane.

20. The computer method of claim 19 in which the one viewing angle is a horizontal viewing angle corresponding to an angle within only a horizontal imaging plane.

21. The computer method of claim 16 in which determining a viewing angle for each region includes determining two viewing angles corresponding to angles within two transverse imaging planes.

22. The computer method of claim 21 in which the two viewing angles are a horizontal viewing angle and a vertical viewing angle corresponding to angle within horizontal and vertical imaging planes, respectively.

23. The computer method of claim 16 in which determining a viewing angle for each region includes determining only one viewing angle for the region corresponding to angles within only one imaging plane.

24. The computer method of claim 16 in which the texture map tile corresponding to the viewing angle is of a predetermined tile structure and includes an oblique parallel projection the predetermined tile structure.

25. The computer method of claim 16 in which the texture map tile corresponding to the viewing angle is of a predetermined tile structure and includes a morphing of the predetermined tile structure.

26. The computer method of claim 16 in which in which the texture map tile corresponding to the viewing angle is of a predetermined tile structure and includes a manually formed renderings of the predetermined tile structure.

27. A method of generating a tile data structure in a computer readable medium representing an image texture for a tiled texture mapping, comprising:

determining plural selected viewing angles for viewing simultaneously plural adjacent tiles of the image texture;

correlating each of the plural selected viewing angles to a predetermined range of viewing angles that includes the selected viewing angle, immediately successive predetermined viewing angle ranges being correlated to adjacent tiles of the image texture; and

forming for each of the selected viewing angles a data structure that includes plural projections of the image texture relative to the selected viewing angles of plural adjacent tiles to be viewed simultaneously.

28. The method of claim 27 in which the image texture includes a front surface with predetermined dimensions and the projections of the image texture relative to the selected viewing angles maintains the predetermined dimensions of the front surface of the image texture.

29. The method of claim 27 in which the projections of the image texture relative to the selected viewing angles are oblique parallel projections.

30. The method of claim 27 in which the plural selected viewing angles are within only one angular dimension.

31. The method of claim 27 in which the plural selected viewing angles are within only two angular dimensions.

32. The medium of claim 27 in which the plural respective views of the image texture are based upon morphings of the image texture.

33. The medium of claim 27 in which the plural respective views of the image texture are based upon manually formed renderings of the image texture.

34. In a computer readable medium, computer software instructions for applying a texture map to an image surface in a graphics image rendered on a computer display screen, comprising:

software instructions for identifying plural adjacent regions of the image surface to which regions the texture map is to be applied;

software instructions for determining a viewing angle for each of the plural regions;

software instructions for correlating each viewing angle with a texture map tile corresponding to the viewing angle; and

software instructions for rendering the texture map tiles at the adjacent regions on the computer display screen to form the texture map on the image surface.

35. The medium of claim 34 in which the texture map tile corresponding to the viewing angle for each region is one of plural predetermined texture map tiles stored in a computer memory.

36. The medium of claim 34 in which the texture map tile corresponding to the viewing angle for each region is calculated based upon the determining of the viewing angle.

37. The medium of claim 34 in which the texture map tile corresponding to the viewing angle for each region is of a predetermined tile structure and includes an oblique parallel projection the predetermined tile structure.

38. The medium of claim 34 in which the texture map tile corresponding to the viewing angle for each region is of a predetermined tile structure and includes a morphing of the predetermined tile structure.

39. The medium of claim 34 in which in which the texture map tile corresponding to the viewing angle for each region is of a predetermined tile structure and includes a manually formed rendering of the predetermined tile structure.

40. (Amended) A computer method of applying a texture map to an image surface in a graphics image rendered on a computer display screen, comprising:

identifying a region of the image surface to which region the texture map is to be applied;

determining a viewing angle for the region, the viewing angle being determined with respect to a selected user viewpoint;

correlating the viewing angle with a texture map tile corresponding to the viewing angle; and

rendering the texture map tile at the region on the computer display screen.

41. (Amended) A method of generating a tile data structure in a computer readable medium representing an image texture for a tiled texture mapping, comprising:

determining plural selected viewing angles for viewing the image texture, the viewing angles being determined with respect to a selected user viewpoint;

correlating each selected viewing angle to a predetermined range of viewing angles that includes the selected viewing angle; and

forming for each of the selected viewing angles a data structure that includes a projection of the image texture relative to the selected viewing angles.

42. (Amended) In a computer readable medium, computer software instructions for applying a texture map to an image surface in a graphics image rendered on a computer display screen, comprising:

software instructions for identifying a region of the image surface to which region the texture map is to be applied;

software instructions for determining a viewing angle for the region, the viewing angle being determined with respect to a selected user viewpoint;

software instructions for correlating the viewing angle with a texture map tile corresponding to the viewing angle; and

software instructions for rendering the texture map tile at the region on the computer display screen.